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| Name: |
| Class Period: |
| Mr. Price – Biology 307 |
| Your Score: |
| Highest Possible Score: |

**Multiple Choice (2 points each):** For each of the following questions, circle the letter of the answer that best answers the question.

1. Ecology is defined as… ***Objective #1 - Knowledge***
2. the scientific study of how matter moves through an ecosystem.
3. the scientific study of interactions among organisms and between organisms and their

environment or surroundings.

1. the scientific study of how energy moves through an ecosystem.
2. the scientific study of our planet’s natural resources.
3. none of the above
4. Of the following, which is NOT a way carbon enters the atmosphere… ***Objective #14 - Knowledge***
5. volcanic activity
6. human respiration
7. burning of fossil fuels
8. decomposition of organic matter
9. none of the above
10. The process by which an organism uses chemical energy to create carbohydrates is called… ***Objective #9 - Knowledge***
11. photosynthesis.
12. chemosynthesis.
13. transpiration.
14. nitrogen fixation.
15. none of the above
16. A diagram that shows the relative amounts of energy or matter contained within each trophic level is referred to as a(an)… ***Objective #8 - Knowledge***
17. pyramid of numbers.
18. biomass pyramid.
19. ecological pyramid.
20. energy pyramid.
21. all of the above
22. Organisms that rely on other organisms for their energy and food supply are referred to as… ***Objective #5 - Knowledge***

A. producers.

B. autotrophs.

1. chemotrophs.
2. heterotrophs.
3. none of the above

**True or False (2 points each):** For each statement, circle True or False.

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| True | False | 1. Each trophic level harvests only about 20% of the energy from the level below. ***Objective #6 - Knowledge*** |
| True | False | 1. Like matter, energy flows through an ecosystem in one direction. ***Objective #12 – Knowledge/Comprehension*** |
| True | False | 1. Some organisms rely on energy stored in inorganic chemical compounds. ***Objective #5 - Knowledge*** |
| True | False | 1. Phosphorus is an essential component of DNA and RNA, and typically does not enter the atmosphere. ***Objective #13 - Knowledge*** |
| True | False | 1. Nitrogen, phosphorus and potassium are major components of plant fertilizer. ***Objective #16 - Knowledge*** |

Fill in the Blank (2 points each): Into each sentence below, copy a term from the word bank that correctly completes the sentence.

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| carnivores | ecosystem | biosphere | herbivores | populations |
| ecological | detrivores | consumers | autotrophs | chemicals |
| sunlight | producers | communities | species | omnivores |

1. All of life on Earth exists in a region known as the \_\_\_\_\_biosphere\_\_\_\_\_\_\_\_. ***Objective #2 - Comprehension***
2. \_\_Communities\_\_\_\_ are assemblages of different populations that live together. ***Objective #2 - Comprehension***
3. \_\_\_Sunlight\_\_\_\_ is the main source of energy for life on Earth, yet some organisms can obtain their energy from inorganic \_\_\_\_\_chemicals\_\_\_\_\_. ***Objective #4 - Comprehension***
4. Organisms that can capture energy from sunlight or chemicals are referred to as \_autotrophs\_\_\_. ***Objective #5 - Comprehension***
5. Earthworms & snails are examples of \_\_\_detrivores\_\_\_\_ that feed on plant and animal remains or other dead matter. ***Objective #7 - Comprehension***
6. Many humans are referred to as \_\_omnivores\_\_\_\_ because they eat both plant & animals. ***Objective #7 - Comprehension***
7. \_\_\_Carnivores\_\_\_\_, including snakes, dogs & owls, eat animals. ***Objective #7 - Comprehension***
8. Organisms are referred to as \_\_\_\_\_\_herbivores\_\_\_ if they obtain their energy by only eating plants. ***Objective #7 - Comprehension***
9. A diagram that shows the relative amounts of energy or matter contained at each trophic level in a food chain or food web is a type of \_\_ecological\_\_\_\_ pyramid.

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| **Complete the diagram by filling in the missing molecules (2 points each):**  ***Objective #3 – Comprehension/Application***  http://schools.look4.net.nz/science/biology/plant/photosynthesis/photosyntheseis1.jpg  2. Oxygen   1. Carbohydrates   http://www.google.com/imgres?imgurl=http://schools.look4.net.nz/science/biology/plant/photosynthesis/photosyntheseis1.jpg&imgrefurl=http://sho3a3elamal.com/photosynthesis-equation%26page%3D4&usg=\_\_Lt1HnIRfpjJMfJ6fapBk20xyb4k=&h=336&w=560&sz=37&hl=en&start=32&zoom=1&tbnid=OyMgMSwZ2mvsYM:&tbnh=131&tbnw=219&ei=xzGATYXKMsWdgQed9tWGCA&prev=/images%3Fq%3Dphotosynthesis%2Bformula%26um%3D1%26hl%3Den%26sa%3DN%26biw%3D1291%26bih%3D522%26tbs%3Disch:10%2C1177&um=1&itbs=1&iact=hc&vpx=348&vpy=147&dur=79&hovh=174&hovw=290&tx=126&ty=129&oei=kTGATenJNM2ftwfH7Z3iCA&page=4&ndsp=10&ved=1t:429,r:1,s:32&biw=1291&bih=522  ***Objective #3 – Comprehension/Application***    http://www.lakehaven.org/images/watercycle.gif  3. transpiration  4. evaporation  http://www.creeksidegardencenter.com/logs/logs.php?search=the-water-cycle-for-kids-clouds&images  **Short Answer (6 points):** Construct a flow chart naming the different levels of organization within the biosphere, from largest to smallest. ***Objective #2 – Application***  Biosphere – biome – ecosystem – community – population – individual/species  **Short Answer (4 points):** Describe 2 different ways a producer obtains their energy and give an example of each. ***Objective #10 - Comprehension***   1. Sunlight – plants/algae/autotrophs  |  | | --- | |  | | 1. Inorganic chemical compounds – bacteria/algae/chemotrophs | |  |   **Short Answer (6 points):** Every living organism needs nutrients to build tissues and carry out essential life functions. Describe the 3 nutrient cycles we discussed in class and relate a reason why each is considered essential. ***Objective #13 - Comprehension***   1. Carbon cycle – key ingredient in living tissue & skeletons  |  | | --- | |  | | 1. Nitrogen cycle – amino acids/proteins | |  | | 1. Phosphorus cycle - DNA | |  |   **Short answer (4 points):** Explain the difference between the flow of matter and energy through an ecosystem. ***Objective #12 - Comprehension***  Matter is recycled through an ecosystem, whereas energy is lost through each trophic level at a   |  | | --- | | rate of approximately 10% per level. | |  |   **Extra Credit (5 points):** Propose a plan to limit the amount of free carbon in the biosphere. Be sure to include cause and effect in your description. ***Objective #16 – Synthesis***  This is really open to student interpretation and could include such things as recycling (however   |  | | --- | | This is debatable), electric cars, limiting industrial carbon emissions (thanks for nothing President | | Bush). Assessment will be based on accurate description of cause & effect as well as the | | reality of the plan to incorporate. | |  | |  |   **(For teacher’s use only)** |
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